DOCUMENT RESUME

ED 279 831 CE 046 492

AUTHOR Walker, Susan S.; Barker, Ellen M.
TITLE Identifying Protein-Calorie Malnutrition Workshop.
INSTITUTION Oklahoma State Board of Vocational and Technical Education, Stillwater. Curriculum and Instructional Materials Center.
PUB DATE 87
NOTE 57p.; For related documents, see CE 046 490-491 and CE 046 494.
PUB TYPE Guides - Classroom Use - Materials (For Learner) (051)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Adult Education; Course Descriptions; *Dietetics; *Dietitians; Food; *Food Service; Inservice Education; Learning Activities; *Nutrition; *Occupational Home Economics; Staff Development; Transparencies; *Workshops
IDENTIFIERS *Diet Therapy

ABSTRACT

Instructional materials are provided for a workshop to enable participants to assist in identifying patients at risk with protein-calorie malnutrition and in corrrecting this nutritional deficiency. Representative topics are nutrients; protein, mineral, and vitamin sources, functions, and deficiency symptoms; malnutrition; nutritional deficiency diseases; meal planning; and various types of diets. Contents include a glossary, a quick check (pretest) with answers, information sheets, workshop assignments, answers to workshop assignments, and a list of workshop references. (YLB)

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Identifying Protein-Calorie Malnutrition Workshop

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Identifying Protein-Calorie Malnutrition Workshop

Written by
Susan Walker, Technical Writer
and
Ellen M. Barker, MS/RD

Coordinated by
Vicki Dearing, Special Projects Coordinator,
Business and Industry Services
State Department of Vocational and Technical Education
Stillwater, Oklahoma

Developed by
Curriculum and Instructional Materials Center
for the Department of Business and Industry Services
Leo Presley, State Supervisor
Oklahoma State Board of Vocational and Technical Education
Leslie Fisher, Chairman
Roy Peters, Jr., Director
Bob Patton, Coordinator, Curriculum and Instructional Materials Center
1987

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Printed in the United States of America by the
State Department of Vocational and Technical Education
Stillwater, Oklahoma 74074

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WORKSHOP OBJECTIVE

After completing this workshop, the participant should be able to assist in identifying patients at risk with protein-calorie malnutrition and aid in correcting this nutritional deficiency.

WORKSHOP CONTENTS

Glossary of Terms 5

Essential Nutrients 9

Carbohydrate and Fat Sources, Functions, and Deficiency Symptoms 11

Protein Sources 13

Protein Requirements 15

Mineral Sources, Functions, and Deficiency Symptoms 17

Mineral Requirements 19

Vitamin Sources, Functions, and Deficiency Symptoms 21

Vitamin Requirements 23

Malnutrition 25

Nutritional Deficiency Diseases 27

Three Types of Adult Protein-Calorie Malnutrition 31

Symptoms of Kwashiorkor and Marasmus 33

A Contrast Between Kwashiorkor and Marasmus 35

Categories of Body Defenses Against Infection 37

Preliminary Nutritional Screening Criteria 39

Assessing the Patient's Nutritional Intake 43

Exchange Lists for Meal Planning 45

Regular Diet 47

Clear-Liquid Diet 49

Full-Liquid Diet 50

Surgical Soft Diet 52

Mechanical Soft Diet 53

Pureed Diet 54

Workshop Assignment #1 — Write Meal Plans for a Regular Diet and a Surgical Soft Diet 55

Workshop Assignment #2 — Calculate Calories and Protein in Clear-Liquid and Full-Liquid Diets 57

Workshop Assignment #3 — Write Meal Plans for a Mechanical Soft Diet and a Pureed Diet 59

Recording Nutritional Intake on Patient Care Plans 61

Workshop Assignment #4 — Chart Patient Care Plans 63

Workshop Assignment #5 — Record Tube Feeding Calories and Protein 71

Answers to Workshop Assignments 73

Workshop References 75

GLOSSARY OF TERMS

Albumin — Protein found in body tissues and fluids; principal function in blood is to regulate osmotic pressure

Amino acids — Nitrogen-containing chemical compounds of which protein is composed

Anorexia nervosa — Literally means "nervous loss of appetite"; a disorder (usually of teenage girls) involving self-starvation to the extreme

Anthropometric — Body measurements such as height, weight, etc.

Arteriosclerosis — General term used to describe thickening and hardening of the arteries

Arthritis — Chronic disease in which the joints become painful and stiff

Atherosclerosis — Accumulation of lipid plaque (fat deposits) within the arterial wall

Atrophy — Wasting away of cells, tissues, or organs

Bulimia — Binge eating; when followed by self-induced vomiting or laxitives, this form of eating has been called the *binge-purge syndrome*

Complete proteins — Proteins containing all of the amino acids essential for humans

Deficiency disease — Disease caused by lack of a specific nutrient

Diabetes mellitus — Chronic disease in which the body lacks the normal ability to metabolize glucose

Edema — Presence of abnormal amounts of fluid in intercellular spaces

Geriatrics — Branch of medicine dealing with diseases of the elderly

Gerontology — The study of aging

Hypertension — Higher than normal blood pressure

Malnutrition — Faulty or inadequate nutrition; poor nourishment

Osteomalacia — Condition in which bones become soft, usually in older people, due to calcium loss

Osteoporosis — Condition in which the bones become brittle because of insufficient mineral deposits

Pica — Abnormal craving for nonfood substance

Protein — Only one of the six essential nutrients that contains nitrogen

Trace element — Minerals that are essential but only in very small amounts

Transferrin — Iron-binding protein that transports iron in the blood

QUICK CHECK

Complete the quiz below to check your understanding of the terms and definitions associated with total nutrition. Each correct answer counts 5 points. Perfect score is 100. Answers are at the bottom of the next page.

1. The protein whose principal function in blood is to regulate osmotic pressure is called _____

2. _____ is the presence of abnormal amounts of fluid in intercellular spaces

3. (Osteoporosis, Osteomalacia) _____ is the condition in which bones become soft, usually in older people, due to calcium loss

4. An abnormal craving for a nonfood substance is called _____

5. _____ is the condition in which cells, tissues, or organs waste away

6. The only essential nutrient to contain nitrogen is called _____

7. Any disease caused by lack of specific nutrient is a _____ disease

8. _____ are nitrogen-containing chemical compounds of which protein is composed

9. _____ contain all of the amino acids essential for humans

10. Body measurements such as height, weight, etc. are called _____

11. A _____ is a mineral that is essential but only in very small amounts

12. _____ is the iron-binding protein that transports iron in the blood

13. _____ is also called *binge eating*, and when followed by self-induced vomiting or laxatives it is called the *binge-purge syndrome*

14. Higher than normal blood pressure is called _____

15. The study of aging is called (gerontology, geriatrics) _____

16. _____ is a chronic disease in which the body lacks the ability to metabolize glucose

17. (Arteriosclerosis, Atherosclerosis) _____ is the general term used to describe thickening and hardening of the arteries

18. _____ literally means "nervous loss of appetite"

19. _____ is a chronic disease in which the joints become painful and stiff

20. _____ results from improper food, poor nourishment, faulty or inadequate nutrition

1. Albumin
2. Edema
3. Osteomalacia
4. Pica
5. Atrophy
6. Protein
7. Deficiency
8. Amino acids
9. Complete proteins
10. Anthropometric
11. Trace element
12. Transferrin
13. Bulimia
14. Hypertension
15. Gerontology
16. Diabetes mellitus
17. Arteriosclerosis
18. Anorexia
19. Arthritis
20. Malnutrition

ESSENTIAL NUTRIENTS

Nutrients are chemical substances found in food. They are necessary for good health. For the body to be well nourished (provided with materials necessary to promote and sustain life), foods containing the essential nutrients must be eaten regularly.

The essential nutrients are

- Carbohydrates
- Fats
- Proteins
- Minerals
- Vitamins
- Water

A nutrient must accomplish at least one of three functions

1. Supply heat and energy to the body
2. Build and repair body tissues
3. Regulate body processes

Carbohydrates and fats primarily furnish heat and energy. Proteins are used mainly to build and repair body tissues with the help of vitamins and minerals. Proteins also provide energy when carbohydrate and fat reserves are low. Vitamins, minerals, and water help regulate the various body processes such as circulation, respiration, digestion, and elimination.

CARBOHYDRATE AND FAT SOURCES, FUNCTIONS, AND DEFICIENCY SYMPTOMS

Carbohydrates

Best Sources	Functions	Deficiency Symptoms
Sugars (monosaccharides and disaccharides)— Candy, syrups Jams and jellies Honey Molasses Cakes Cookies	Furnish heat and energy Aid in metabolism of fats	Loss of weight; fatigue
Starch (polysaccharides)— Flour Macaroni products Bread Crackers Cereals Potatoes Corn Lima beans Green peas Bananas, pears, apples	Furnish heat and energy Aid in metabolism of fats The fruits and vegetables also provide bulk and some vitamins and minerals	Loss of weight; fatigue
Cellulose (polysaccharide)— Bran, whole grain cereals Green and leafy vegetables Fruits, especially apples, pears, oranges, grapefruit	Provides bulk (fiber) necessary for peristalsis	Possible constipation

Fats

Best Sources	Functions	Deficiency Symptoms
Butter	Furnish heat and energy	Loss of weight
Lard or lard substitutes	Carry fat-soluble vitamins	Retarded growth
Margarine	Supply essential fatty acids	Abnormal skin
Meat fats	Give satiety to meals	
Bacon		
Oils		
Nuts		
Cheese		
Cream		
Egg yolk		

From *Nutrition and Diet Therapy* by Carolynn E. Townsend, copyright 1985.

PROTEIN SOURCES

Foods High in Protein

Food	Approximate Amount	Protein (g)
Beef, chuck roast	3 oz cooked	23.4
Beef, hamburger	3 oz cooked	20.5
Beef round	3 oz cooked	24.7
Beef, club steak	4 oz cooked	27.6
Lamb leg	3 oz cooked	21.6
Liver (beef, calf, and pork)	3 oz cooked	20.4
Pork loin	3 oz cooked	20.7
Ham	3 oz cooked	20.7
Veal, leg or shoulder	3 oz cooked	25.2
Chicken	1/4 broiler	22.4
Chicken, fryer	1/2 breast (4 oz raw)	26.9
Chicken, hen, stewed	1 thigh or 1/2 breast	26.5
Duck, roasted	3 slices (3 1/2 × 2 3/4 × 1/4)	20.6
Goose, roasted	3 slices (3 1/2 × 2 3/4 × 1/4)	25.3
Turkey	3 slices (3 1/2 × 2 3/4 × 1/4)	27.8
Haddock	3 oz cooked	20.2
Halibut	3 oz cooked	21.0
Oysters	6 medium	15.1
Salmon	2/3 cup	20.5
Scallops	5 to 6 medium	23.8
Tuna	1/2 cup	15.9
Peanut butter	4 Tbs	15.9
Milk	1 cup	8.5
Cottage cheese	5 to 6 Tbs	19.5
American cheddar cheese	1 oz	7.1

From *Nutrition and Diet Therapy* by Carolynn E. Townsend, copyright 1985.

PROTEIN REQUIREMENTS

Daily Protein Requirements

	Age (years)	Weight (kg)	Weight (lb)	Height (cm)	Height (in)	Protein (g)
Infants	0.0-0.5	6	13	60	24	kg × 2.2
	0.5-1.0	9	20	71	28	kg × 2.0
Children	1-3	13	29	90	35	23
	4-6	20	44	112	44	30
	7-10	28	62	132	52	34
Males	11-14	45	99	157	62	45
	15-18	66	145	176	69	56
	19-22	70	154	177	70	56
	23-50	70	154	178	70	56
	51+	70	154	178	70	56
Females	11-14	46	101	157	62	46
	15-18	55	120	163	64	46
	19-22	55	120	163	64	44
	23-50	55	120	163	64	44
	51+	55	120	163	64	44
Pregnant						+30
Lactating						+20

Source: Food & Nutrition Board, National Academy of Sciences, Washington, D.C. 1980.

Protein in an Average Diet for One Day

Menu	Serving Size	Protein (Grams)	KCAL
Breakfast Menu			
Orange juice	½ cup	1	45
Cornflakes	¾ cup	1	75
with sugar	2 tsp		30
Toast	2 slices	4	140
Butter	1 Tbsp		65
Jelly	1 Tbsp		60
Skim milk	½ cup	4	50
Lunch Menu			
Grapefruit juice	½ cup	1	50
Tuna salad sandwich	⅔ cup tuna salad	20	220
on bread c/ lettuce	2 slices (bread)	4	140
Carrot sticks	1 carrot	1	25
Canned pears	½ cup	1	100
Oatmeal cookies	2	1	160
Skim milk	1 cup	8	100
Dinner Menu			
Chicken breast	½ (3 oz)	26	160
Baked potato	1	4	145
Asparagus	½ cup		25
Sliced tomato salad	1 tomato	1	25
Roll	1	1	100
with butter	1 Tbsp		65
Ice cream	⅔ cup	3	200
Skim milk	1 cup	8	100
		89	2080

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QUICK CHECK

Complete the exercise below to determine the amount of protein needed by an individual. Keep in mind, that the 1980 RDA's state that a healthy adult needs 0.8 gram of protein for each kilogram of body weight.

1. Complete the exercise at the bottom the page to determine your desirable body weight.

   My desirable body weight is _____

2. Change your desirable body weight to kilograms by dividing it by 2.2 (2.2 pounds equal 1 kilogram).

   My body weight in kilograms is _____

3. Calculate your protein needs

   Body weight in kilograms _____ x 0.8 gram protein = _____ grams of protein needed in one day

To calculate desirable body weight

Female

Allow 100 pounds for the first 5 feet of height, and then add 5 pounds for each additional inch.

(NOTE: This rule of thumb method applies to an individual of medium or average build. Subtract 10 percent for a small frame, or add 10 percent for a large frame.)

Height _____

Number of inches over 5 feet _____

Desirable body weight (average frame) _____ (Add or subtract 10 percent if necessary)

Male

Allow 106 pounds for the first 5 feet of height, and then add 6 pounds for each additional inch.

Height _____

Number of inches over 5 feet _____

Desirable body weight (average frame) _____ (Add or subtract 10 percent if necessary)

MINERAL SOURCES, FUNCTIONS, AND DEFICIENCY SYMPTOMS

Minerals	Best Sources	Functions	Deficiency Symptoms
Calcium	Milk Cheese Some dark green, leafy vegetables	Normal development and maintenance of bones and teeth Clotting of the blood Nerve irritability Normal heart action Normal muscle activity Activates enzymes	Retarded growth Poor tooth and bone formation Rickets Slow clotting time of blood Tetany
Phosphorus	Milk and cheese Meat Poultry Fish Whole grain cereals Legumes Nuts	Normal development and maintenance of bones and teeth Maintenance of normal acid-base balance of the blood Constituent of all body cells Necessary for effectiveness of some vitamins Metabolism of carbohydrates, fats, and proteins	Retarded growth Poor tooth and bone formation Rickets Weakness Anorexia Pain in bones General malaise (Symptoms are rare)
Magnesium	Meat Nuts Milk Cereal grains Fresh green vegetables Legumes	Constituent of bones, muscles, and red blood cells Necessary for healthy muscles and nerves Metabolism	Unusual heart action Mental, emotional, and muscle disorders Kidney defects
Sodium	Salt Meat Poultry Fish Eggs Milk	Fluid balance Acid-base balance Osmosis Regulates muscle and nerve irritability Glucose absorption	Nausea Exhaustion Muscle cramps
Potassium	Meat Milk Vegetables Fruits, especially oranges, bananas, and prunes.	Osmosis Fluid balance Regular heart rhythm Cell metabolism	Muscle weakness Apathy Abnormal heartbeat
Chlorine	Salt Meat Milk Eggs	Osmosis Fluid balance Acid-base balance Formation of hydrochloric acid	Very rare, but may occur after prolonged vomiting Nausea Exhaustion
Sulfur	Protein foods	For building hair, nails, and all body tissues Constituent of all body cells Metabolism	Unknown

MINERALS (Continued)

Minerals	Best Sources	Functions	Deficiency Symptoms
Trace Minerals			
Iron	Liver Muscle meats Legumes Dried fruits Egg yolk Whole grain or enriched breads and cereals Dark green and leafy vegetables Potatoes	Essential for formation of hemoglobin of the red blood cells Constituent of cellular enzymes	Anemia characterized by weakness, dizziness, loss of weight, and pallor
Copper	Oysters Nuts Liver Kidney Legumes	Essential for formation of hemoglobin of the red blood cells Component of enzymes	Anemia (see iron) Bone disease
Iodine	Saltwater fish Foods grown in soil bordering salt water Iodized salt	Formation of hormones in thyroid gland	Goiter
Manganese	Whole grains Legumes Nuts Vegetables Fruits	Component of enzymes Glucose utilization	Unknown
Zinc	Seafood, especially oysters Liver Meat Eggs Milk	Component of insulin and enzymes Wound healing Taste acuity Essential for growth	Thought to be dwarfism, hypogonadism, anemia Loss of appetite Skin changes Impaired wound healing Decreased taste acuity
Fluorine	Fluoridated water	Increases resistance to tooth decay	Tooth decay
Cobalt	Supplied in Vitamin B_{12}	A component of vitamin B_{12}, necessary for formation of the red blood cells	Unknown
Chromium	Meats Cheese Whole grains	Associated with glucose metabolism May influence protein and fat metabolism	Possibly disturbances of glucose metabolism
Molybdenum	Meats Poultry Cereal Legumes	Constituent of all body tissues and fluids	Unknown
Selenium	Seafood Kidney Liver Muscle meats	Constituent of all tissue	Muscle aches

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MINERAL REQUIREMENTS

Recommended Daily Dietary Allowances, Revised 1980

		Weight		Height		Minerals					
	Age (years)	(kg)	(lb)	(cm)	(in)	Calcium (mg)	Phos-phorus (mg)	Mag-nesium (mg)	Iron (mg)	Zinc (mg)	Iodine (mg)
Infants	0.0-0.5	6	13	60	24	360	240	50	10	3	40
	0.5-1.0	9	20	71	28	540	360	70	15	5	50
Children	1-3	13	29	90	35	800	800	150	15	10	70
	4-6	20	44	112	44	800	800	200	10	10	90
	7-10	28	62	132	52	800	800	250	10	10	120
Males	11-14	45	99	157	62	1200	1200	350	18	15	150
	15-18	66	145	176	69	1200	1200	400	18	15	150
	19-22	70	154	177	70	800	800	350	10	15	150
	23-50	70	154	178	70	800	800	350	10	15	150
	51+	70	154	178	70	800	800	350	10	15	150
Females	11-14	46	101	157	62	1200	1200	300	18	15	150
	15-18	55	120	163	64	1200	1200	300	18	15	150
	19-22	55	120	163	64	800	800	300	18	15	150
	23-50	55	120	163	64	800	800	300	18	15	150
	51+	55	120	163	64	800	800	300	18	15	150
Pregnant						+400	+400	+150	*h*	+5	+25
Lactating						+400	+400	+150	*h*	+10	+50

Source: Food and Nutrition Board, National Academy of Sciences—National Research Council.

VITAMIN SOURCES, FUNCTIONS, AND DEFICIENCY SYMPTOMS

Vitamins	Best Sources	Functions	Deficiency Symptoms
Fat-Soluble Vitamins Vitamin A	Fish liver oils Liver Butter, margarine (fortified) Whole milk, cream, cheese Egg yolk Vegetables (leafy green and yellow) Fruits (yellow)	Growth Health of eyes Structure and functioning of the cells of the skin and mucous membranes	Functional disorders of the eye (night blindness) Increased susceptibility to infections Changes in skin and membranes Xerophthalmia
Vitamin D	Sunshine Fatty fish Milk (irradiated) Egg yolk Liver Cream Butter	Growth Regulating calcium and phosphorus metabolism Building and maintaining normal bones and teeth	Rickets Poor tooth development Osteomalacia
Vitamin E	Wheat germ and wheat germ oils Vegetable oils Margarine Legumes Peanuts Dark green, leafy vegetables Egg yolk	Considered essential for protection of cell structure, especially of red blood cell	Increased rate of hemolysis of the red blood cells
Vitamin K	Spinach Kale Cabbage Cereals	Normal clotting of blood	Defective blood clotting
Water-Soluble Vitamins Thiamine (B_1)	Wheat germ Lean pork Yeast Legumes Whole grain and enriched cereal products Liver Heart Kidney	Carbohydrate metabolism	Loss of appetite Irritability Fatigue Constipation Beriberi
Riboflavin	Milk, cheese Enriched bread and cereals Green, leafy vegetables Liver, kidney, heart	Carbohydrate, fat, and protein metabolism Health of the mouth tissue Healthy eyes	Cheilosis Eye sensitivity

VITAMINS (Continued)

Vitamins	Best Sources	Functions	Deficiency Symptoms
Niacin	Meats (especially organ meats) Poultry and fish Enriched breads and cereals	Prevention of pellagra Carbohydrate, fat, and protein metabolism	Skin eruptions Diarrhea Nervous disorders Anorexia Pellagra
Vitamin B_6	Pork Organ meats Legumes Bananas Potatoes	Metabolism of proteins	Anemia Dermatitis Confusion Depression Convulsions Nausea
Vitamin B_{12}	Liver, kidney Muscle meats Milk, cheese Eggs	Metabolism Healthy red blood cells Treatment of pernicious anemia	Anemia Sore mouth & tongue Amenorrhea
Folacin	Dark green, leafy vegetables Liver Fish Whole grain cereals Legumes	Metabolism Formation of hemoglobin	Anemia Glossitis Diarrhea Gastrointestinal disturbances
Pantothenic Acid	Heart, liver, kidney Eggs, salmon, yeast Peanuts, legumes Whole grain cereals	Metabolism of carbohydrates, fats and proteins	Vomiting Abdominal cramps Leg cramps Insomnia
Biotin	Organ meats Mushrooms Peanuts	Metabolism	Nausea Muscle pain Depression Anorexia Hypercholesteremia Anemia
Vitamin C (Ascorbic Acid)	Citrus fruits, pineapple Melons Berries Tomatoes Cabbage Broccoli Green Peppers	Maintaining collagen Healthy gums Aids in wound healing Aids in absorption of iron	Sore gums Tendency to bruise easily Scurvy

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VITAMIN REQUIREMENTS

Recommended Daily Fat-Soluble Vitamin Requirements

	Age (years)	Weight (kg)	Weight (lb)	Height (cm)	Height (in)	Fat-Soluble Vitamins: Vitamin A (μg RE)	Vitamin D (μg)	Vitamin E (mg αTE)
Infants	0.0-0.5	6	13	60	24	420	10	3
	0.5-1.0	9	20	71	28	400	10	4
Children	1-3	13	29	90	35	400	10	5
	4-6	20	44	112	44	500	10	4
	7-10	28	62	132	52	700	10	7
Males	11-14	45	99	157	62	1000	10	8
	15-18	66	145	176	69	1000	10	10
	19-22	70	154	177	70	1000	7.5	10
	23-50	70	154	178	70	1000	5	10
	+51	70	154	178	70	1000	5	10
Females	11-14	46	101	157	62	800	10	8
	15-18	55	120	163	64	800	10	8
	19-22	55	120	163	64	800	7.5	8
	23-50	55	120	163	64	800	5	8
	51+	55	120	163	64	800	5	8
Pregnant						+200	+5	+2
Lactating						+400	+5	+3

Recommended Daily Water-Soluble Vitamins

	Age (years)	Weight (kg)	Weight (lb)	Height (cm)	Height (in)	Water-Soluble Vitamins: Vitamin C (mg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg NE)	Vitamin B-6 (mg)	Folacin (μg)	Vitamin B-12 (μg)
Infants	0.0-0.5	6	13	60	24	35	0.3	0.4	6	0.3	30	0.5
	0.5-1.0	9	20	71	28	35	0.5	0.6	8	0.6	45	1.5
Children	1-3	13	29	90	35	45	0.7	0.8	9	0.9	100	2.0
	4-6	20	44	112	44	45	0.9	1.0	11	1.3	200	2.5
	7-10	28	62	132	52	45	1.2	1.4	16	1.6	200	3.0
Males	11-14	45	99	157	62	50	1.4	1.6	18	1.8	400	3.0
	15-18	66	145	176	69	60	1.4	1.7	18	2.0	400	3.0
	19-22	70	154	177	70	60	1.5	1.7	19	2.2	400	3.0
	23-50	70	154	178	70	60	1.4	1.6	18	2.2	400	3.0
	51+	70	154	178	70	60	1.2	1.4	16	2.2	400	3.0
Females	11-14	46	101	157	62	50	1.1	1.3	15	1.8	400	3.0
	15-18	55	120	163	64	60	1.1	1.3	14	2.0	400	3.0
	19-22	55	120	163	64	60	1.1	1.3	14	2.0	400	3.0
	23-50	55	120	163	64	60	1.0	1.2	13	2.0	400	3.0
	51+	55	120	163	64	60	1.0	1.2	13	2.0	400	3.0
Pregnant						+20	+0.4	+0.3	+2	+0.6	+400	+1.0
Lactating						+40	+0.5	+0.5	+5	+0.5	+100	+1.0

Source: Food and Nutrition Board, National Academy of Sciences, Washington, D.C.

QUICK CHECK

Using the RDA tables for vitamin and mineral requirements, complete the following table for an adult man and an adult woman, 23 to 50 years old.

	Male	Female
Vitamin A	_____	_____
Vitamin D	_____	_____
Vitamin E	_____	_____
Vitamin C	_____	_____
Thiamine	_____	_____
Riboflavin	_____	_____
Niacin	_____	_____
Calcium	_____	_____
Iron	_____	_____
Zinc	_____	_____

Do you note any differences in the amounts between male and female? _____

What nutrient requirement is considerably different between male and female? _____

State amounts. Male _____ Female _____

MALNUTRITION

Causes

- Person does not eat enough of the foods that provide the essential nutrients to satisfy body needs
- Person may eat full, well-balanced diet, but suffer from a disease that prevents normal usage of the nutrients
- Person may be undergoing treatments such as drug therapy or surgery that create physical changes that prevent food from being used normally

Characteristics

- Dull, lifeless hair
- Greasy, pimpled facial skin
- Dull eyes
- Slumped posture
- Fatigue and depression shown in spiritless expressions and behavior
- May be underweight or overweight, and skeletal growth may be stunted
- Marked reduction in resistance to disease; recovery from disease may be slower than that for well-nourished people
- Insomnia is common

  (NOTE: Sleep may be affected because malnutrition influences the nervous system.)
- Irritable and nervous with reduced attention span
- Constipation is common
- Mental retardation, disease, and even death can result from severe malnutrition

Persons prone to malnutrition

- Infants
- Preschool children
- Adolescents
- The elderly

  (NOTE: The elderly are often alone and unwell. Their living conditions are not always conducive to forming a healthy appetite. Part of the joy of eating is sharing one's food in pleasant company. Lack of companionship or illness can make eating unpleasant and difficult.)
- Pregnant women

NUTRITIONAL DEFICIENCY DISEASES

BERIBERI — Deficiency disease caused by lack of vitamin B_1 (thiamin)

In the United States, mild forms of the disease sometimes occur in persons who are on extremely restricted diets. Alcoholics, who tend to decrease food intake drastically during periods of drinking, may show signs of beriberi. The disease also occurs in persons whose diet consists of highly refined and overcooked foods.

CACHEXIA — Severe malnutrition and body wasting caused by chronic disease

CHEILOSIS — Riboflavin (B_2) deficiency characterized by cracks and sores on the lips

GOITER — Enlargement of the thyroid gland, usually caused by lack of iodine in the diet

KWASHIORKOR — Deficiency disease related principally to lack of protein or lack of essential amino acids

This disease is found mostly in infants and young children soon after weaning; however an adult kwashiorkor-like state can occur in the well-nourished or over-nourished individual in whom the combination of severe catabolic stress and substandard intake of nutrients combine to depress the level of protein and the ability of the individual to fight against infection.

MARASMUS — Severe wasting caused by extreme lack of calories and protein or by faulty absorption; physical starvation

NUTRITIONAL ANEMIA — Deficiency of iron in the diet

Anemia may develop if the diet does not provide enough iron, protein, vitamin B_{12} (folic acid) and other vitamins and minerals needed in the production of hemoglobin and the formation of erythrocytes. The combination of poor diet and chronic loss of blood makes for particular susceptibility to severe anemia.

NUTRITIONAL EDEMA — Edema caused by lack of protein

In nutritional edema, the lowered concentration of plasma proteins decreases the osmotic pressure, thereby permitting passage of abnormal amounts of fluid out of blood vessels and into the tissue spaces.

PCM — Protein-calorie malnutrition

PELLAGRA — Deficiency of niacin in the diet

Pellagra may also be caused by failure to convert tryptophan to niacin. Most persons with pellagra also suffer from deficiencies of vitamin B_2 (riboflavin) and other essential vitamins and minerals. Pellagra occurs in many areas of the world. Until recent years, it was the major form of acute vitamin deficiency in the southeastern United States. It is now sharply on the decline, due largely to the efforts of the public health service. The disease also occurs in persons suffering from alcoholism and drug addiction.

PERNICIOUS ANEMIA — Severe, chronic anemia caused by deficiency of vitamin B_{12}

Pernicious anemia is not really a nutritional deficiency but improper use of food ingested; therefore, special diets, liver extract, and other medications taken by mouth are usually not required for treatment. Treatment consists of regular injections of vitamin B_{12}.

RICKETS — Deficiency disease caused by lack of vitamin D; causes malformed bones in infants

When a vitamin D deficiency occurs in adults, it produces a condition known as *osteomalacia*, softening of the bone.

SCURVY — Deficiency disease caused by lack of ascorbic acid (vitamin C)

The only adults in the United States likely to develop scurvy are older people who live alone and neglect their diet. In adults, scurvy causes swollen and bleeding gums, looseness of the teeth, rupture of small blood vessels, and small black and blue spots on the skin. Treatment of scurvy consists of supplying the missing vitamin in prescribed doses, and supplying the proper diet, including fresh fruits and vegetables. When this is done, the symptoms quickly disappear.

XEROPHTHALMIA — Abnormal dryness and thickening of the surface of the conjunctiva and cornea due to a deficiency of vitamin A or to local disease

QUICK CHECK

Match the deficiency diseases below to their correct definitions. Answers are at the bottom of the page, but don't peek until you have completed the self-check. Each correct answer counts 7 points; perfect score is 98 percent.

_____a. Disease caused by lack of vitamin D in diet

_____b. Disease caused by lack of riboflavin (vitamin B_2) in diet

_____c. Disease caused by lack of thiamin (vitamin B_1) in diet

_____d. Protein-calorie malnutrition

_____e. Disease caused by lack of niacin in diet

_____f. Disease caused by lack of protein or essential amino acids in diet

_____g. Disease caused by lack of iodine in diet

_____h. Disease caused by lack of B_{12} in diet

_____i. Physical starvation

_____j. Disease caused by lack of ascorbic acid (vitamin C) in diet

_____k. Eye condition caused by lack of vitamin A in diet

_____l. Disease caused by deficiency of iron in diet

_____m. Edema caused by lack of protein in diet

_____n. Malnutrition and body wasting caused by chronic disease

1. Beriberi
2. Cachexia
3. Kwashiorkor
4. Cheilosis
5. Goiter
6. Marasmus
7. Nutritional anemia
8. Pernicious anemia
9. Nutritional edema
10. PCM
11. Pellagra
12. Rickets
13. Scurvy
14. Xerophthalmia

a. 12, b. 4, c. 1, d. 10, e. 11, f. 3, g. 5, h. 8, i. 6, j. 13, k. 14, l. 7, m. 9, n. 2

THREE TYPES OF ADULT PROTEIN-CALORIE MALNUTRITION

Adult Kwashiorkor-Like State

- Common syndrome in the well-nourished or over-nourished individual in whom the combination of severe catabolic stress and substandard intake of nutrients combine to depress the level of protein and the ability of the individual to fight infection
- Evolves from a protein-deficient diet in which calories are mostly from carbohydrates
- Patients may tend to maintain their correct weight for their height or may be overweight
- Edema is a common feature
- Lab tests would show a lowering of serum proteins such as albumin and transferrin

Adult Marasmus

- Chronic illness characterized by a prolonged and gradual wasting of muscle mass and subcutaneous fat
- Evolves from inadequate intake of protein and calories
- Serum albumin may be normal
- Decreased weight and arm circumference are common features
- Not dependent upon biochemical assessment for identification, but rather upon anthropometric measurements and visual inspection

Marasmic Kwashiorkor-Like Stage

- Far advanced stage of chronic starvation, combining some of the clinical features of the other two types of adult PCM
- Characterized by patient who has mobilized reserves of fat and lean body mass for a prolonged period in an unsuccessful effort to recover from chronic illness or injury
- Is extremely serious because of the high risk of complications, infections and otherwise

SYMPTOMS OF KWASHIORKOR AND MARASMUS

Kwashiorkor

- Edema results in large pot belly, swollen legs and face
- Muscles lack tone
- Anorexia (loss of appetite) and diarrhea are common
- Profound apathy and general misery (not interested in surroundings)
- Liver infiltrated with fat
- Levels of triglycerides, phospholipids, and cholesterol are reduced, indicating inability of liver to manufacture and release these substances to the circulation
- Atrophy of the pancreas results in the lessened production of important enzymes: amylase, lipase, and trypsin
- Total serum protein and albumin are markedly reduced and account for edema
- Hemoglobin levels are low
- Serum levels of vitamin A are usually reduced

Marasmus

- No edema
- Blood protein content is reduced less markedly
- Skin changes are seen less frequently
- Liver is not infiltrated with fat
- Period of recovery is much longer

A CONTRAST BETWEEN KWASHIORKOR AND MARASMUS

Characteristic	Kwashiorkor	Marasmus
Growth failure	Present	Present
Edema	Present	Not Present
Mental changes	Present	Uncommon
Hepatomegaly (Enlargement of liver)	Common	Uncommon
Hair changes	Common	Uncommon
Dermatosis (Flaky paint skin)	Fairly common	Uncommon
Anemia	Present	Present
Subcutaneous fat	Reduced but present	Not present
Appetite	Poor	Good

CATEGORIES OF BODY DEFENSES AGAINST INFECTION

First Line of Defense

The body's first line of defense is found in body surfaces exposed to the outside environment: The skin and secretions of glands associated with the skin (sweat, tears, oily secretions of sebaceous glands). Secretions of the glands contain chemicals toxic to some types of bacteria.

The mucus produced by the mucous membranes also contains some chemicals that may be toxic to certain bacteria. Furthermore, mucus is sticky and catches bacteria that can then be disposed of.

Because skin cells and other cells in the first line of defense are constantly turning over and renewing themselves, they must have an adequate supply of nutrients. The skin of malnourished individuals becomes thinner and contains less connective tissue and collagen than that of well-nourished individuals.

If an invader does gain entry into the body, the second line of defense is called into action.

Second Line of Defense

The cells that participate in the immune function become the second line of defense. They are found primarily in lymph tissue—the thymus, lymph nodes, spleen, bone marrow, and areas lining the GI tract. White blood cells are the mobile components of the immune system. There are three types of white blood cells—granulocytes, monocytes, and lymphocytes—and all three are formed from the same precursor cells.

In children with severe protein-calorie malnutrition, the thymus gland atrophies, and the lymph nodes and spleen are smaller in size.

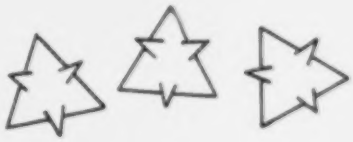
The Third Line of Defense

The third line of defense consists of sensitized T-lymphocytes and antibodies. Lymphocytes originate from precursors in the bone marrow, but are released from the bone marrow and mature into two distinct types of lymphocytes—T-cells and B-cells.

Cell-mediated immunity is immunity conferred by the reaction of sensitized T-cells to an invading organism. Cell-mediated immunity appears to be significantly affected by malnutrition.

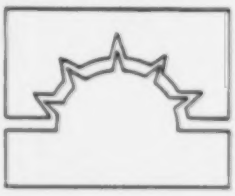
Humoral immunity is conferred by the actions of B-cells. When a foreign substance reaches the lymph tissues containing B-cells, the B-cells rapidly divide and then differentiate into plasma cells that produce antibodies. The body remembers how to make specific antibodies, so the next time the foreign organism is encountered, the immune response can occur with greater speed. In malnutrition, antibody response may be impaired.

1. Body is challenged with foreign invaders.



2. Body makes "machine" for manufacturing antibody.

3. Machine makes antibody.



4. Antibody inactivates foreign invader.

5. Machine remains to make antibodies faster the next time foreign invader attacks.

Adapted from *Understanding Normal and Clinical Nutrition* by Eleanor Noss Whitney and Corinne Balog Cataldo, copyright 1983 by West Publishing Co.

PRELIMINARY NUTRITIONAL SCREENING CRITERIA

Initial Patient Interview

The patient interview is an important part of the screening process. The patient should be interviewed within 24 hours of arrival into the facility. The following are suggestions for information that should be elicited during the interview:

- Food preferences or food intolerances (including allergies)
- Usual patterns of eating
- Changes of appetite or taste
- Weight changes in recent months
- Any noted digestive changes or disorders
- Observation of patient (underweight, overweight, skin problems, etc.)
- A self-nutrition history to compare to basic food groups
- Anthropometric data
  - Present height
  - Present weight
  - Calculated desirable body weight

In-Depth Nutritional Assessment

If a problem is detected in the initital screening, a more in-depth nutritional assessment should be made. This assessment requires that you gather both dietary and laboratory data.

- Dietary data —Obtain by observing and recording actual intake for a period of two to three days
- Laboratory data —Obtain nutritionally related laboratory tests such as
  - Hemoglobin
  - Hematocrit
  - Cholesterol
  - Triglycerides
  - Total protein
  - Albumin

QUICK CHECK

Interview the workshop participant assigned as a "learning buddy" for the following information:

1) Usual eating pattern (use the 24-hour Recall form on the following page)

2) Food preferences or food intolerances

3) Weight changes in recent months

4) Any noted digestive changes or disorders

Upon completion of the interview, evaluate the food intake of your learning buddy using the basic food groups and information given in the *Oklahoma Diet Manual's* "Guide to Good Eating: A Daily Pattern." (This Guide is found on pages A-5 and A-6 in the 1982 *Manual*.)

Did your learning buddy take in the following amounts of each food group?

2 cups milk

5 to 6 ouces meat

4 servings of breads or cereals

4 servings of fruits and vegetables (one source of vitamin C and one source of vitamin A)

24-HOUR RECALL

FOODS EATEN	MILK GROUP	MEAT GROUP	VEGETABLE-FRUIT GROUP	BREAD-CEREAL GROUP	EXTRA FOODS

Milk Group	Meat Group	Vegetable-Fruit Group	Bread-Cereal Group

1. **How many servings did you eat from each group?**
2. **Did you meet Basic Four amounts?**
3. **How was the food distributed throughout the day?**

ASSESSING THE PATIENT'S NUTRITIONAL INTAKE

It is not always possible for the dietitian to easily assess whether or not the patient may be getting inadequate calories and protein. The questions below are some of those that the dietitian should ask herself or himself. In the space below the questions, add any other questions or methods that work for you.

- Is patient's weight normal for height, using the height-weight charts

- Is there some record of food intake being kept for this patient?

- Are the exchange groups being used for easy, quick calculation of food left on the patient's tray?

- Are the exchange groups being used for calculation of the amount of protein left in the foods on the tray?

- Is information concerning adequate food intake relayed to the nurse in charge?

- Is information concerning food intake charted on the patient's care plan by the dietitian?

- Other methods of assessing patient's nutritional intake

_____

_____

_____

_____

EXCHANGE LISTS FOR MEAL PLANNING

	CHO	PRO	FAT	CAL
LIST 1 — Starches/Breads*	15	3	—	80
LIST 2 — Meat/Substitutes				
—Lean	—	7	3	55
—Medium-Fat	—	7	5	75
—High-Fat	—	7	8	100
LIST 3 — Vegetables*	5	2	—	25
LIST 4 — Fruits*	15	—	—	60
LIST 5 — Milk*				
—Non-Fat	12	8	1	90
—Low-Fat (2%)	12	8	5	120
—Whole	12	8	8	150
LIST 6 — Fats	—	—	5	45

*Carbohydrate-containing Exchange Lists.

REGULAR DIET

The regular or general diet represents a normal food plan and is the foundation of all modified diets. The nutritional needs of adults vary widely, depending on body size, age, and activity. Generally, people on a regular diet require nutrients for health maintenance only, and not for therapy. Modifications should be made as appropriate. The regular diet provides the nutrients of the Recommended Dietary Allowance for the healthy adult.

Regular Diet Food Allowances

Milk
All types, 2 or more cups

Cheese
(as meat substitute)
As desired

(NOTE: Cheese foods and spreads are not comparable in protein.)

Eggs
1 daily as desired

Meat, fish, poultry
2 servings (4 oz to 6 oz)

Potato or potato substitute
1 or more servings

Breads and cereals
4 or more servings of whole-grain or enriched products

Vegetables
2 or more servings

Fruits
2 or more servings

(NOTE: Fruit drinks are not comparable in nutrients to fruit juice.)

Soups
As desired

Desserts
1 or 2 servings to fit caloric limitations after other foods are chosen

Beverages
6 to 8 glasses daily

Fats
4 to 6 teaspoons

(NOTE: Bacon is considered a fat, not a meat.)

Sweets
To fit caloric limitations after other foods are chosen

Typical Meal Plan for the Regular Diet

Morning

Fruit or juice (citrus)
Cereal
Egg
Bread
Fat
Milk
Beverage
Sugars or sweets

Noon

Meat, fish, or poultry
Potato or substitute
Cooked or raw vegetables
Bread
Fat
Dessert or fruit
Beverage

Evening

Cream soup (if desired)
Meat or substitute
Cooked or raw vegetables
Bread
Fat
Fruit or dessert
Milk
Beverage

Bedtime

Fruit juice

CLEAR-LIQUID DIET

The clear-liquid diet consists of only clear liquids, which help prevent dehydration. This diet may be used before or after surgery, in acute inflammatory conditions of the gastrointestinal tract, and in conditions when it is necessary to reduce the amount of fecal material in the colon. This diet *does not* meet the Recommended Dietary Allowances for any nutrient, and should be used for only a short period of time. Calories are very limited, and the primary nutrient is carbohydrate, with only negligible quantities of protein and fat.

Clear-Liquid Diet Food Allowances

Fruit
3 or more servings per day of apple or cranberry juice

Soup
3 or more servings per day of clear beef, chicken, or vegetable broth

Dessert
Clear flavored gelatin, clear fruit ice, popsicle as desired

Beverage
Coffee, tea, coffee substitutes, artificially flavored fruit drinks, Gatorade, carbonated beverages, low-residue supplements as desired

Miscellaneous
Sugar or hard candy as desired

Typical Meal Plan for Clear-Liquid Diet

Morning	Noon	Evening	Snack
1 cup juice	1 cup juice	1 cup juice	Juice
1 cup broth	1 cup broth	1 cup broth	Popsicle
½ cup gelatin	½ cup gelatin	½ cup gelatin	
Beverage as desired	Beverage as desired	Beverage as desired	

FULL-LIQUID DIET

The full-liquid diet is used when surgical procedures or when swallowing or chewing problems make use of solid foods unadvisable. The definition of *liquid* is a food that is liquid at room or body temperature. The full-liquid diet may be low in iron, folic acid, niacin, and thiamin. These nutrients can be obtained by taking a basic multiple vitamin with iron or by adding a nutritional supplement.

Clear-Liquid Diet Food Allowances

Milk
6 cups per day

Eggs
3 per day in custards, puddings, ice cream, etc., or pasteurized eggs used in eggnogs

(NOTE: *Do not* use raw eggs or raw egg white.)

Cereals
1 cup per day of refined cooked cereals or strained whole-grain cereals in gruels

Fruits and vegetables
4 or more servings per day of all juices, strained fruit, strained vegetable puree diluted in soups, or mashed potato diluted in cream soups

Soups
2 or more servings per day of clear, strained, cream, or pureed soups

Desserts
Cornstarch puddings, custard, gelatin, plain ice creams, sherbet, fruit ices, popsicles, Bavarian creams as desired

Fats
Small amounts of gutter or margarine added to the soups or cereals

Other beverages
Coffee, tea, coffee substitutes, carbonated beverages, cocoa, artifically flavored fruit drinks, instant breakfast, cereal beverages, liquid dietary supplements as desired

Miscellaneous
Honey, sugar, syrup, salt, flavorings, chocolate syrup, cinnamon, nutmeg, brewer's yeast, hard candy as desired

Typical Meal Plan for the Full-Liquid Diet

Morning

1 cup juice
1 cup cereal
Butter or margarine
1 cup milk
Sugar as desired
Beverage as desired

Noon

1 cup juice
1 serving soup
1 dessert
1 cup milk
Beverage as desired

Evening

1 cup juice
1 serving soup
1 dessert
1 cup milk
Beverage as desired

Snacks

Juice, milk, dessert
Milk beverage or liquid dietary supplement as desired

SURGICAL SOFT DIET

The surgical soft diet follows the normal dietary pattern with modifications in consistency, flavor, and preparation. It consists of foods that are moderately soft in texture and mild in flavor. This diet serves as a step between the Full-Liquid Diet and the Regular Diet for postoperative and convalescent patients. This diet provides the nutrients of the Recommended Dietary Allowances for the healthy adult. Refer to the Regular Diet for a typical meal plan.

Surgical Soft Diet Food Allowances

Foods Allowed	Foods to Be Avoided
Milk	
2 or more cups per day	
Meat	
2 3-ounce servings or equivalent each day of cottage cheese, cream cheese, other mild cheeses, eggs, tender beef, veal, lamb, pork, poultry, fish, peanut butter (may be pureed or ground if necessary)	Strongly flavored cheeses, any meats with tough connective tissue, highly spiced luncheon meats, whole nuts, dried beans or peas if not tolerated
Grain	
4 or more servings per day of all breads, cereals (except those listed under "Avoid"), all pastas, rice, flours	Breads or cereals containing nuts, bran cereals, shredded wheat, Grape Nuts, corn, and popcorn
Fruits and vegetables	
2 servings of canned, cooked, frozen, or fresh fruits each day, including 1 serving of high vitamin C source 2 or more servings each day of canned, cooked, or fresh vegetables that are tolerated, including dark green or deep yellow vegetables 3 to 4 times per week	Omit unless well tolerated; strongly flavored vegetables such as cabbage, raw onions, raw green peppers, cucumbers, and raw fruits such as apples
Fats	
No restrictions	
Desserts	
Most are suitable as desired	Any dessert containing nuts
Sweets	
Most are suitable	Any sweet containing nuts
Beverages	
No restrictions	
Soups	
Most are suitable as desired	Any soups made with ingredients to avoid, such as corn, dried beans, and peas
Miscellaneous	
Most are suitable in moderation	Highly seasoned sauces such as barbecue or steak sauce, olives, and pickles

MECHANICAL SOFT DIET

The mechanical soft diet follows the normal dietary pattern with modification for consistency. It consists of foods that are moderately soft in texture and easy to chew. This diet is designed to provide adequate nutrition for the person who has an impaired ability to chew. This diet provides the nutrients in the Recommended Dietary Allowances for the healthy adult. Refer to Regular Diet for meal plan.

Mechanical Soft Diet Food Allowances

Foods Allowed	Foods to Be Avoided
Milk	
2 or more cups per day	
Meat	
2 3-ounce servings per day of eggs, cheese, tender beef, veal, poultry, fish, peanut butter (may be pureed or ground if necessary)	Any meats with tough connective tissue; whole nuts
Fruits and vegetables	
2 servings of fruit and 2 or more servings of all canned, cooked, or frozen fruits and vegetables; all juices, fresh fruits and vegetables that are easily chewed or finely chopped if necessary	Fresh fruits or vegetables that are difficult to chew
Grain	
4 or more servings per day of all breads, cooked cereals, dry cereals that are easily chewed, rice, or pastas	Dry cereals not easily chewed
Fats	
No restrictions	
Desserts	
Any as desired	Desserts containing whole nuts
Sweets	
Any as desired	Sweets containing whole nuts
Beverages	
No restrictions	
Soups	
No restrictionsd	Any soups made with ingredients to avoid, such as corn, dried beans, and peas
Miscellaneous	
Spices, herbs, and flavoring ingredients as desired	

PUREED DIET

The pureed diet follows the regular dietary pattern with modifications in consistency as necessary for the patient with impaired chewing ability. It should be prepared so that it will go through a straw or a squeezable bottle. This diet is designed to provide adequate nutrition for those patients with fractured jaws or for those patients unable to chew or swallow soft foods, such as patients who have had strokes. It provides the nutrients of the Recommended Dietary Allowance for the healthy adult.

Pureed Diet Food Allowances

Milk

4 or more servings per day (all types)

Meat

2 3-ounce blenderized servings per day

Fruits and vegetables

2 servings of pureed fruit each day, including 1 serving of high vitamin C source

2 or more servings pureed vegetables each day, including dark green or deep yellow vegetables 3 to 4 times per week

Grain

2 or more servings per day of cooked or dry cereals plus milk, blenderized thin

Fats

Margarine, butter, cream, oil as needed to make food palatable as desired

Desserts

As desired, pureed thin—such as pudding with milk

Sweets

Sugar or honey as desired

Beverages

No restrictions

Soups

As desired, blenderized thin

WORKSHOP ASSIGNMENT #1 — WRITE MEAL PLANS FOR A REGULAR DIET AND A SURGICAL SOFT DIET

NAME _____ DATE _____

Write a one-day meal plan for regular and soft diets. Refer to food allowances and sample menus for the Regular Diet (page 47) and the Surgical Soft Diet (page 52). Calculate calories and grams of protein, using American Dietetic Association exchange lists.

REGULAR DIET

Breakfast	Protein	Calories
Dinner		
Supper		
TOTALS		

SURGICAL SOFT DIET

Breakfast	Protein	Calories
Dinner		
Supper		
TOTALS		

WORKSHOP ASSIGNMENT #2 — CALCULATE CALORIES AND PROTEIN IN CLEAR-LIQUID AND FULL-LIQUID DIETS

NAME _____ DATE _____

Using American Dietetic Association exchange lists and the values on page 45, calculate calories and protein for the following Clear-Liquid and Full-Liquid diets.

CLEAR-LIQUID DIET

Breakfast	Protein	Calories
1 cup beef broth		
½ cup raspberry jello		
Black coffee with sugar		
10 A.M.		
1 cup tomato juice		
Dinner		
1 cup chicken broth		
½ cup lime jello		
Tea with sugar		
3 P.M.		
1 cup grape juice		
Supper		
1 cup beef broth		
½ cup orange ice		
Coffee with sugar		
9 P.M.		
½ cup ginger ale		
TOTALS		

FULL-LIQUID DIET

Breakfast	Protein	Calories
½ cup orange juice	_____	_____
1 cup strained cream of wheat	_____	_____
with cream (½ c, 20%) and sugar (1 t)	_____	_____
1 cup coffee with cream (2 T, 20%) and sugar (1 t)	_____	_____
10 A.M.		
½ cup custard	_____	_____
Dinner		
1 cup strained cream of mushroom soup	_____	_____
½ cup apple juice	_____	_____
½ cup raspberry sherbet	_____	_____
1 cup milk	_____	_____
3 P.M.		
½ cup eggnog (1 egg + ½ c milk)	_____	_____
Supper		
1 cup beef broth	_____	_____
½ cup grape juice	_____	_____
½ cup vanilla ice cream	_____	_____
1 cup coffee with cream (2T, 20%) and sugar (1 t)	_____	_____
9 P.M.		
½ cup vanilla pudding	_____	_____
TOTALS	_____	_____

Can you think of a nutrient that may be inadequate in this meal plan?

WORKSHOP ASSIGNMENT #3 — WRITE MEAL PLANS FOR A MECHANICAL SOFT DIET AND A PUREED DIET

NAME _____ DATE _____

Write a one-day meal plan for soft and pureed diets. Refer to food allowances and sample menus for the Mechanical Soft Diet (page 53) and the Pureed Diet (page 54). Calculate calories and grams of protein, using American Dietetic Association exchange lists.

MECHANICAL SOFT DIET

Breakfast	Protein	Calories
Dinner		
Supper		
TOTALS		

PUREED DIET

Breakfast	Protein	Calories
Dinner		
Supper		
TOTALS		

RECORDING NUTRITIONAL INTAKE ON PATIENT CARE PLANS

The responsibility of knowing how a patient may be eating falls largely on the dietary manager. The dietary manager must be able to communicate this information effectively to the nurse in charge, and so must know how to document patient care plans.

Use the following guidelines when recording nutritional intake on patient care plans.

- Check height and weight monthly against desirable body weight listed in height-weight tables.
- Record all food eaten.
- Be aware of how many days a patient is on IV glucose.
- Be aware of how many days a patient is on a clear-liquid diet.
- Be aware of how many calories and grams protein are served on the full-liquid diet.
- Be sure that all of the four basic food groups are served to patients on full-liquid or pureed diets.
- Be sure that the amounts of food served on the regular diet are adequate for sufficient calorie intake for all patients served.
- Record tube feedings each day as to amount left in container.
- Supplement patient's diet when necessary to ensure adequate nutrition.
- Record information in patient care plan on a regular basis.
- Verbally relay information to nurse in charge concerning a patient who is not eating.

WORKSHOP ASSIGNMENT #4 — CHART PATIENT CARE PLANS

NAME _____ DATE _____

The skilled dietary manager should be able to write on patient care plans concise and accurate information about the patient's food intake. Use the nutrition care plans on the following pages to chart patient care plans for the individuals described in the following case studies.

Patient Situation #1

Mrs. Brown is an 84-year-old white female. She is 5 feet 3 inches tall and she weighs 94 pounds. She has been diagnosed as having arteriosclerosis and is senile. She is lactose intolerant.

Mrs. Brown has a diet order of clear-liquid diet for 1 week. How might you chart a patient care plan for this patient?

Patient Situation #2

Mr. Howe is on a 2000-calorie Sustagen tube feeding. He is 57 years old, 5 feet 8 inches tall, and weighs 140 pounds. He has been diagnosed as having had a cerebrovascular accident (stroke).

You note, as you pick up the container of the tube feeding each day, that approximately one-half of the feeding is left in the container. You have been aware of this happening for about 5 days. How might you chart a patient care plan for this patient?

Patient Situation #3

Mrs. Johnson was hospitalized with a fractured hip. At 68 years old, 5 feet 4 inches, 102 pounds, she was very thin, and although her doctor considered her hip bone to be somewhat osteoporotic, her surgery was uneventful and her hip was healing normally. She was scheduled for release 2 weeks after her surgery; however, she was listless and pale and seemed to grow increasingly depressed, weeping more and more frequently. Her doctor prescribed iron because her blood iron was somewhat low. The dietition was asked to interview her because the nurses reported that she scarcely touched her trays. The dietition discovered that Mrs. Johnson had periodontal disease and could not manage to chew the bacon, meat, and toast on her trays.

What diet would you recommend for Mrs. Johnson? Chart a patient care plan for Mrs. Johnson.

NUTRITION CARE PLAN

	Name: Stella A. Brown			Admission No: 462	Admission Date:
	Sex:	Birthdate: 5/21/1903	Height:	Weight:	Religion:

History					
	FOOD PATTERN: Breakfast Dinner Supper Between Meals	WILL EAT: Milk Meat Fruits Vegetables Cereal	FOOD DISLIKES OR INTOLERANCES	COMMENTS PERTINENT TO DIET:	PHYSICAL ASSESSMENT Medication: (diet related)

Date	Goals	Approach	Problem

Need for Self-Help Device	EATS Room - Dining Room	FEEDS Self - w/Assistance - Fed

DIET ORDERS

Date	Type of Diet	Doctor	Comments	Initial

REASSESSED

Date	Problem	Comments	Assessment Qrtly.	WT	Initial

NUTRITION CARE PLAN

Name: Robert Z. Howe			Admission No: 401	Admission Date:
Sex:	Birthdate: 12/1/1930	Height:	Weight:	Religion:

History					
	FOOD PATTERN: Breakfast Dinner Supper Between Meals	WILL EAT: Milk Meat Fruits Vegetables Cereal	FOOD DISLIKES OR INTOLERANCES	COMMENTS PERTINENT TO DIET:	PHYSICAL ASSESSMENT Medication: (diet related)

Date	Goals	Approach	Problem

Need for Self-Help Device	EATS Room - Dining Room	FEEDS Self - w/Assistance - Fed

DIET ORDERS

Date	Type of Diet	Doctor	Comments	Initial

REASSESSED

Date	Problem	Comments	Assessment Qrtly.	WT	Initial

NUTRITION CARE PLAN

	Name: ELLA JOHNSON			Admission No: 385	Admission Date:
	Sex:	Birthdate: 4/4/1918	Height:	Weight:	Religion:

History					
	FOOD PATTERN: Breakfast Dinner Supper Between Meals	WILL EAT: Milk Meat Fruits Vegetables Cereal	FOOD DISLIKES OR INTOLERANCES	COMMENTS PERTINENT TO DIET:	PHYSICAL ASSESSMENT Medication: (diet related)

Date	Goals	Approach	Problem

Need for Self-Help Device	EATS Room - Dining Room	FEEDS Self - w/Assistance - Fed

DIET ORDERS

Date	Type of Diet	Doctor	Comments	Initial

REASSESSED

Date	Problem	Comments	Assessment Qrtly.	WT	Initial

WORKSHOP ASSIGNMENT #5 — RECORD TUBE FEEDING CALORIES AND PROTEIN

NAME _____ DATE _____

A tube feeding of 1500 calories and 70 grams of protein is placed in a refrigerator to be served by the nursing personnel for a 24 hour period. The tube feeding contains 2000 cc. When you pick up the container the next morning, you notice that approximately one-third of the formula remains. How many calories and how much protein did the patient actually consume?

Calories = _____

Protein = _____

ANSWERS TO WORKSHOP ASSIGNMENTS

Workshop Assignment #1 — Evaluated to the satisfaction of the workshop instructor

Workshop Assignment #2

CLEAR-LIQUID DIET

Breakfast	Protein	Calories
1 cup beef broth	0	6
½ cup raspberry jello	3	80
Black coffee with sugar (1 t)	0	16
10 A.M.		
1 cup tomato juice	4	50
Dinner		
1 cup chicken broth	0	6
½ cup lime jello	3	80
Tea with sugar (1 t)	0	16
3 P.M.		
1 cup grape juice	0	240
Supper		
1 cup beef broth	0	6
½ cup orange ice	6	160
Coffee with sugar (1 t)	0	16
9 P.M.		
½ cup ginger ale	0	50
Totals	16	726

FULL-LIQUID DIET

Breakfast	Protein	Calories
½ cup orange juice	0	60
1 cup strained cream of wheat with cream (½ c, 20%) and sugar (1 t)	0	180 + 16
1 cup coffee with cream (2 T, 20%) and sugar (1 t)	0	45 + 16
10 A.M.		
½ cup custard	7	150

Workshop Assignment #2 (continued)

Dinner	Protein	Calories
1 cup strained cream of mushroom soup	3	80 + 45
1/2 cup apple juice	0	60
1/2 cup raspberry sherbet	6	160
1 cup milk	8	150
3 P.M.		
1/2 cup eggnog (1 egg, 1/2 c. milk)	7 4	75 75
Supper		
1 cup beef broth	0	6
1/2 cup grape juice	0	120
1/2 cup vanilla ice cream	3	80
1 cup coffee with cream (2 T, 20%) and sugar (1 t)	0	45 + 16
9 P.M.		
1/2 cup vanilla pudding	4	175
Totals	48	1714

Workshop Assignment #3 — Evaluated to the satisfaction of the workshop instructor

Workshop Assignment #4 — Evaluated to the satisfaction of the workshop instructor

Workshop Assignment #5

Calories = 500
Protein = 23 grams

WORKSHOP REFERENCES

Hamilton, Eva May Nunnelley, Eleanor Noss Whitney, and Francis Sienkiewicz Sizer. *Nutrition: Concepts and Controversies*, 3rd ed. St. Paul, Minnesota: West Publishing Company, 1985.

Ray, Glenda Pullin, R.D. *Oklahoma Diet Manual*. Oklahoma City: Oklahoma Dietetic Association, 1982.

Townsend, Carolynn E. *Nutrition and Diet Therapy*, 4th ed. Albany, New York: Delmar Publishers, Incorporated, 1985.

Whitney, Eleanor Noss, and Corinne Balog Cataldo. *Understanding Normal and Clinical Nutrition*. St. Paul, Minnesota: West Publishing Company, 1983.